

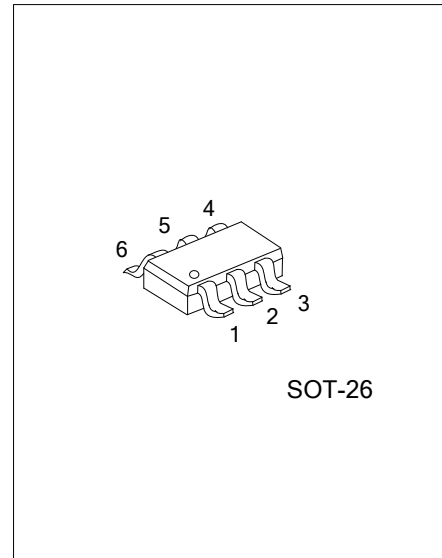


## UMX2110

Advance

LINEAR INTEGRATED CIRCUIT

### LOW ON-RESISTANCE WIDE BANDWIDTH DUAL 1:1 ANALOG SWITCH OF LEVEL SHIFTER



#### DESCRIPTION

The UTC **UMX2110** is a Dual 1:1 analog switch of level shifter designed with advanced CMOS technology. The wide bandwidth of this level shifter allows USB2.0 signals to completely pass with minimum distortion when  $V_{DD}$  at 5V. It is bidirectional and designed for low bit-to-bit skew, high channel-to-channel noise isolation.

The UTC **UMX2110** offers a high-performance, low-cost solution.

#### FEATURES

\*  $V_{DD}$  Supply : 4.4V ~ 5.5V

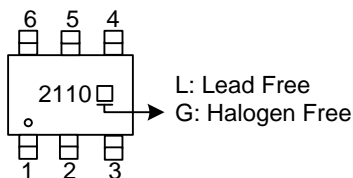
\* Low On-Resistance :  $5\Omega$  @  $V_{DD} = 4.4V$

#### ORDERING INFORMATION

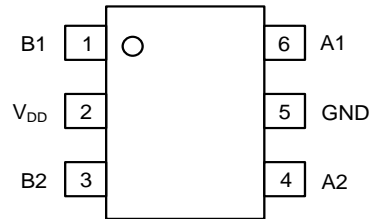
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UMX2110L-AG6-R	UMX2110G-AG6-R	SOT-26	Tape Reel

<p>UMX2110G-AG6-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) AG6: SOT-26</li> <li>(3) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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#### MARKING



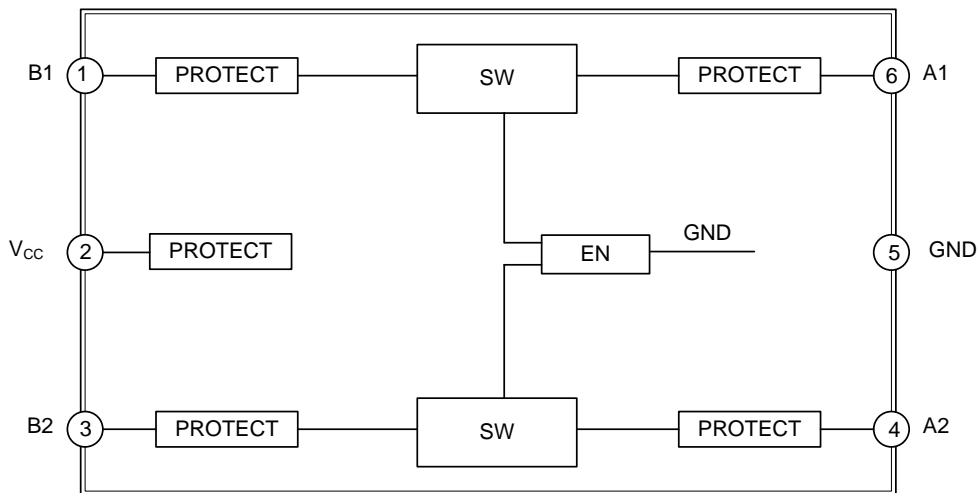
## ■ PIN CONFIGURATION



## ■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1, 3	B1, B2	Data Bus B
2	V <sub>DD</sub>	Power
4, 6	A2, A1	Data Bus A
5	GND	Ground

## ■ BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATING ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
DC Input Voltage	$V_{DD}$	-0.5V ~ +7.0V	V
DC Output Current		120	mA
Supply Voltage to Ground Potential		-0.5 ~ +7.0	V
Power Dissipation	$P_D$	0.5	W
Operating Temperature	$T_{OPR}$	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-65 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

### ■ DC ELECTRICAL CHARACTERISTICS

( $V_{IN}=5\text{V}$ ,  $T_A=25^\circ\text{C}$  unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note 1)	MAX	UNIT
Supply Voltage	$V_{DD}$		4.4	5	5.5	V
Power Supply Current	$I_S$	$V_{DD}=5.5\text{V}$			1	$\mu\text{A}$
Analog Signal Range	$V_{SWITCH}$		0		$V_{DD}-V_{TH}$ (Note 2)	V
I/O Leakage Current	$I_{LK}$	$V_{DD}=5\text{V}$ , $V_{IN}=0\sim 5\text{V}$			$\pm 1$	$\mu\text{A}$
ON-Resistance	$R_{ON}$	$V_{DD}=4.4\text{V}$ , $V_{IN}=0\text{V}$ , $I_{ON}=-56\text{mA}$		4		$\Omega$
		$V_{DD}=4.4\text{V}$ , $V_{IN}=2.4\text{V}$ , $I_{ON}=-56\text{mA}$		7		$\Omega$
Match Between Channels	$\Delta R_{ON}$	$V_{DD}=4.4\text{V}$ , $V_{IN}=0\text{V}$ , $I_{ON}=-56\text{mA}$		0.4		$\Omega$
Ron Flatness	$R_{FLAT}$	$V_{DD}=4.4\text{V}$ , $V_{IN}=0\text{V}$ , $I_{ON}=-56\text{mA}$		3		$\Omega$

Notes: 1.  $T_A=25^\circ\text{C}$  ambient and maximum loading unless otherwise specified.  
2.  $V_{TH}$  is the threshold voltage of MOS device.

### ■ SWITCHING CHARACTERISTICS

( $V_{DD}=3.3\text{V}$ ,  $T_A=-40^\circ\text{C} \sim +85^\circ\text{C}$  unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP (Note 1)	MAX	UNIT
Propagation Delay	$t_{PD}$	$R_L=50\Omega$ , $C_L=10\text{pF}$ (Note 2), see Fig. 1		0.25		ns
Capacitance, Switch ON	$C_{(ON)}$	$V_{IN}=0\text{V}$ , $f=1\text{MHz}$		3.7		pF
-3dB Bandwidth	BW	See Fig. 2		700		MHz
Crosstalk	$X_{TALK}$	$f=10\text{MHz}$		-83		dB

Notes: 1.  $T_A=25^\circ\text{C}$  ambient and maximum loading unless otherwise specified.  
2.  $C_L$  includes probe and jig capacitance.

■ TEST CIRCUIT AND WAVEFORMS

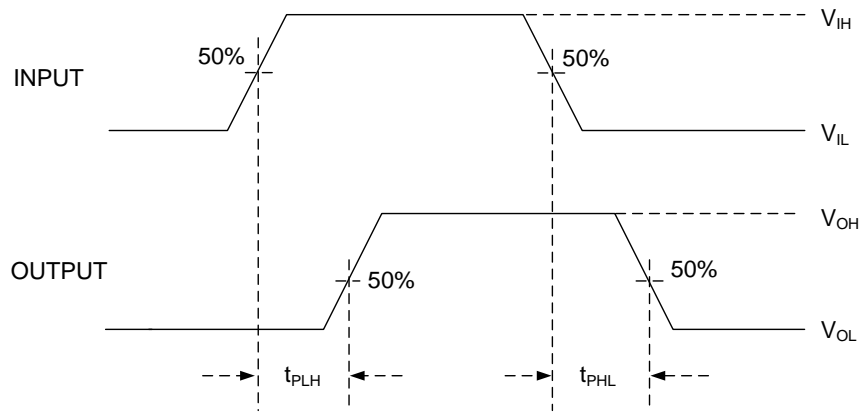


Fig.1 PROPAGATION DELAY TIMES

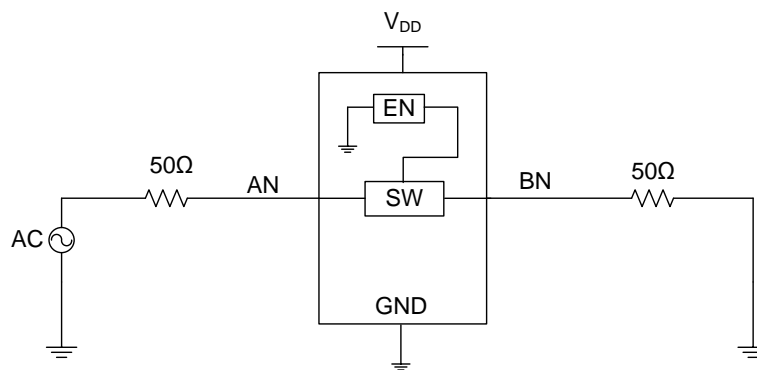


Fig.2 BANDWIDTH

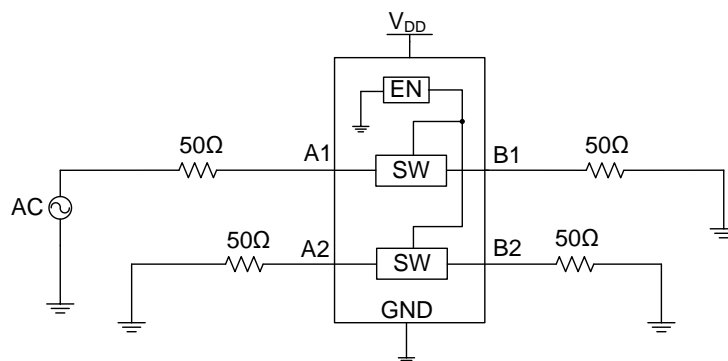
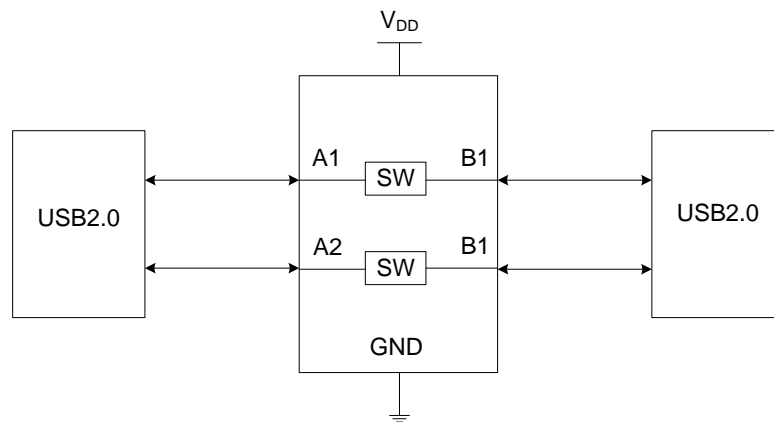


Fig.3 CROSSTALK

■ TYPICAL APPLICATION CIRCUIT



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